

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Schottland, et al.	
Application No.: 10/063,792	
Filed: 5/13/2002	Group Art Unit: 1772
Title: Plastics articles such as bottles with visual effect	Examiner: Marc A. Patterson
Attorney Docket No.: GEPL.P-051	Confirmation No.: 1633

**BRIEF FOR APPELLANT**

This brief is filed in support of Applicants' Appeal from the final rejection mailed June 15, 2006. Consideration of the application and reversal of the rejections are respectfully urged.

Real Party in Interest

The real party in interest is General Electric Company .

Related Appeals and Interferences

To Applicants' knowledge, there are no related appeals or interferences.

Status of Claims

Claims 1-23, 28-41 and 78-80 are pending and are the subject of this appeal. Claims 24-27 and 42-77 have been canceled. No other claims have been presented

Status of Amendments

The response after final rejection filed August 15, 2006 has been entered.

### Summary of Claimed Subject Matter

As set forth in independent claim 1, the present application relates to a bottle. (Figs. 3A and B, Page 1, lines 1 and 5) The bottle has an annular portion comprising a molded body formed from a plastic composition (§§ 17-18). The plastic composition comprises a plastic with an index of refraction of at least 1.4 and a photoluminescent material. (§§ 12, 21).

The annular portion has a graphic image formed as cuts or protrusions, or both, in the plastic composition on a surface of the molded body thereof. (§§ 11, 13-15) These cuts and protrusions provide a luminescent visual effect in the shape of the graphic image as a result of the photoluminescent material that is part of the plastic composition. (§ 3)

### Grounds of Rejection to be reviewed on Appeal

Claims 1-3, 5, 6, 8-10, 13-16, 18, 19, 21-23, 30-33, 35, 36, 38, 39 and 78-80 stand rejected as obvious over the combination of Brown et al. in view of Pollard.

Claims 4, 7, 17, 20, 34, and 37 stand rejected as obvious over the combination of Brown et al. in view of Pollard and Madalo.

Claims 11, 12, 40 and 41 stand rejected as obvious over the combination of Brown et al. in view of Pollard and Lee.

### Argument

The present invention is a plastic bottle formed from a plastic that contains a photoluminescent material. Because of the photoluminescent material, a graphic image formed on the surface of the bottle, as cuts or protrusions in the plastic, the edges of the graphic image glow, thus providing a visual effect.

### Rejection of claims 1-3, 5, 6, 8-10, 13,-16, 18, 19, 21-23, 30, 33, 35, 36, 38, and 78-80

The Examiner cites Brown et al. US Patent No. 3,416,175 for a teaching of plastic bottles that have a graphic image in the form of relief decorations on the surface thereof. The Examiner states that the difference between the claimed invention and Brown is that Brown does not teach

a photoluminescent material to provide a visual effect in the shape of the graphic image. Pollard is cited as teaching a polycarbonate material in combination with "a photoluminescent material" for the purpose of obtaining a colored plastic. The Examiner argues that it would have been obvious to put the "photoluminescent material" into the bottles of Pollard and that this renders the identified claims obvious. Applicants submit that this argument is in error, and reversal of the rejection is urged.

The annular body of the bottle of the present invention comprises the plastic material and the photoluminescent material. Thus, in order to suggest this invention the combination of references must suggest that the material of Pollard be dispersed throughout the bottle. Such a suggestion is not found in the references. Indeed, Brown consistently refers to the use of a separate colored adherent sheet for coloring the relief portions of the plastic article formed therein to make it different in appearance from the remainder of the container. (See, for example, Col. 1, lines 52-53, 57-58; Col. 2, lines 9-10; Col. 3, lines 59-61; Col. 4, line 1 - Col. 5, line 6 ). Thus, to the extent that a combination with Pollard is suggested, the objective combination would be to add the Pollard colorant to the relief area only since this is where color is disclosed in the Brown reference.

Furthermore, it should be understood that the bottles of the present invention need not be colored to achieve the visual effect. Because the visual effect is a consequence of emitted light, channeled to the edges of the graphic image, significant coloration of the bottle is not required. Furthermore, the color of the visual effect is likely to be different to any coloration in the bottle as a result of the Stokes shift in the photoluminescence. Nothing in the combination of references suggests this visually interesting effect and therefore the result of the combination as claimed in claim 1 is non-obvious, and the rejection of this claim, and all of the claims dependent thereon should be reversed.

Claims 2, 15, and 30 and the claims dependent thereon include the additional limitation that the photoluminescent material is an organic fluorescent dye. In response to the argument that Pollard discloses pigments, not dyes, the Examiner stated that "the difference between pigments and dyes is unclear." (Advisory Action mailed August 30, 2006, Page 3). The Pollard

reference specifically defines the difference, however, stating that:

The term pigment means substances which are generally considered insoluble in the vehicle, and pigments generally have the property of light refractivity. (Dyes are considered solubility and generally have only the property of light absorption.)

(Col. 6, lines 49-53). Thus, quite clearly the art recognizes the difference between dyes and pigments, and Pollard only relates to pigments since it is based on the use of a pigment which "must be in particle form." (Col. 6, line 56) Thus, the Examiner has offered no explanation of how the references suggest and render obvious the invention of claim 2.

Claim 8 specifies that fluorescent dye is included at a concentration of 0.0001% to 0.0003 % by weight. In contrast, Pollard at its broadest teaches inclusion of between about 0.1 and about 10 parts per hundred by weight. (Col. 9, lines 4-6). The Examiner has offered no explanation of how a reduction of nearly three orders of magnitude can be considered an obvious variation. Thus, this claim is not obvious over the combination of the cited references.

Claim 9 provides a list of options for the fluorescent dye. The Examiner has argued that xanthenes are obvious, but has not shown that xanthene is specifically taught in the Pollard reference. Instead, he argues merely that "Pollard teaches a fluorescent material, and therefore includes xanthene." (Advisory Action, page 3). This argument is incorrect. Pollard teaches pigments, not dyes, and the examiner had offered no basis for an assertion that xanthenes are pigments or would be included in the scope of Pollard's disclosure even if not mentioned. Thus, there is no prima facie case of obviousness with respect to claim 9, and claim 10 which is dependent thereon.

For these reasons, Applicants submit that none of the claims rejected based in Brown and Pollard alone are properly rejected, and therefore that these rejections should be reversed.

#### Rejection of Claims 4, 7, 17, 20, 34, and 37

Claims 4, 17 and 34 state that the article comprises a fluorescent dye that "provides a blue or violet visual effect and the fluorescent dye is included at a concentration of 0.5 to

0.001% by weight." <sup>1</sup> Claims 7, 20 and 37 state that the fluorescent dye provides a red, orange or green visual effect and the fluorescent dye is included at a concentration of less than 0.0005% by weight.

The Examiner states that the primary combination of Brown and Pollard fails to teach a fluorescent dye producing a blue or red visual effect. The Examiner then adds to this combination of references US Patent No. 3,573,472 of Madalo as evidence that the selection of the "color of a fluorescent dye depending on the suitability of the fluorescent dye for viewing in a desired color of visible light." In making this argument, the Examiner continues to not recognize the fact that Pollard does not disclose a fluorescent dye of any sort. Furthermore, the teaching attributed to Madalo is not a correct characterization of the reference. The full text of Madalo at Col. 3 lines 39-52 acknowledges first of all that "photoluminescent materials used for symbols are generally colorless," thus confirming the point argued above that adding a visual effect through the use of a photoluminescent material is different from adding color. Second, Madalo says if you want the symbol to also be visible in ordinary light, you add a colored material as well. This teaching has no relevance to the patentability of the present invention.

Furthermore, the claims do not simply say that the light emitted by the fluorescent dye has a particular color. The claims also specify a concentration range for the fluorescent material, that is different depending on the color of the fluorescence. The Examiner has offered no reasoning any the selection of the particular claimed range would have been obvious for the particular color. Thus, there is no prima facie case of obviousness presented with respect to these claims.

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<sup>1</sup> It is noted that claims dependent on the claims included in this rejection, are rejected only under the base rejection. It is not apparent why the Examiner included them in the base rejection rather than this rejection, and all arguments in this section apply to claims 5, 6, 9, 18, 19, 21, 35, 36 and 38 as well.

### Rejection of Claims 11, 12, 40 and 41

Claims 11, 12, 40 and 41 specify that the photoluminescent material is a fluorescent dye with specified minimum quantum yield.<sup>2</sup> These claims are rejected as obvious over the combination of Brown and Pollard and US Patent No. 5,066,580 of Lee. Lee is cited solely for a teaching that the quantum yield of xanthene is 0.93. The examiner argues that because of his assertion that Brown and Pollard together disclose xanthene, the quantum yield limitations are met inherently. This argument is in error because, as demonstrated above, Brown and Pollard do not disclose xanthene or any other fluorescent dye. Thus, the combination of reference and the rejection as a whole is based on a flawed premise and should be reversed.

### Conclusion

In view of the foregoing, Applicant submits that all of the claims of this application are in form for allowance. Reversal of the rejections under 35 USC § 103 is respectfully urged.

Respectfully submitted,



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<sup>2</sup> Quantum yield is the fraction: # photons emitted/# photons absorbed.

## Claims Appendix

1. An article, wherein the article is a bottle having an annular portion comprising a molded body formed from a plastic composition comprising a plastic having an index of refraction of at least 1.4 and a photoluminescent material, wherein the annular portion has a graphic image formed as cuts or protrusions, or both, in the plastic composition on a surface of the molded body thereof to provide a luminescent visual effect in the shape of the graphic image as a result of the photoluminescent material that is part of the plastic composition.
2. The article of claim 1, wherein the photoluminescent material is an organic fluorescent dye.
3. The article of claim 2, wherein the fluorescent dye is included at a concentration of 1 % or less by weight of the plastic.
4. The article of claim 3, wherein the fluorescent dye provides a blue or violet visual effect and the fluorescent dye is included at a concentration of 0.5 to 0.001% by weight.
5. The article of claim 4, wherein the fluorescent dye is included at a concentration of 0.3 to 0.1% by weight.
6. The article of claim 4, wherein the fluorescent dye is included at a concentration of 0.1% to 0.005% by weight.
7. The article of claim 3, wherein the fluorescent dye provides a red, orange or green visual effect and the fluorescent dye is included at a concentration of less than 0.0005% by weight.
8. The article of claim 7, wherein the fluorescent dye is included at a concentration of 0.0001% to 0.0003% by weight.
9. The article of claim 2, wherein the fluorescent dye is selected from the group consisting of perylene derivatives, anthracene derivatives, indigoid and thioindigoid derivatives, imidazole derivatives, naphthalimide derivatives, xanthenes, thioxanthenes, coumarins, rhodamines, (2,5-bis[5-tert-butyl-2-benzoxazolyl]thiophene) and derivatives thereof.
10. The article of claim 9, wherein the fluorescent dye is included at a concentration of 1 % or less by weight of the plastic.
11. The article of claim 2, wherein the fluorescent dye has a quantum yield of 0.7 or greater.
12. The article of claim 14, wherein the fluorescent dye has a quantum yield of 0.9 or greater.

13. The article of claim 2, wherein the graphic images is formed from cuts having a depth of from 0.5 to 3 mm or protrusions having a height of from 0.5 to 5 mm or combinations thereof.
14. The article of claim 1, wherein the plastic is polycarbonate.
15. The article of claim 14, wherein the photoluminescent material is an organic fluorescent dye.
16. The article of claim 15, wherein the fluorescent dye is included at a concentration of 1 % or less by weight of the polycarbonate.
17. The article of claim 16, wherein the fluorescent dye provides a blue or violet visual effect and the fluorescent dye is included at a concentration of 0.5 to 0.001% by weight.
18. The article of claim 17, wherein the fluorescent dye is included at a concentration of 0.3 to 0.1% by weight.
19. The article of claim 17, wherein the fluorescent dye is included at a concentration of 0.1 to 0.005% by weight.
20. The article of claim 16, wherein the fluorescent dye provides a red, orange or green visual effect and the fluorescent dye is included at a concentration of less than 0.0005% by weight.
21. The article of claim 20, wherein the fluorescent dye is included at a concentration of 0.0001% to 0.0003% by weight.
22. The article of claim 15, wherein the fluorescent dye is selected from the group consisting of perylene derivatives, anthracene derivatives, indigoid and thioindigoid derivatives, imidazole derivatives, naphthalimide derivatives, xanthenes, thioxanthenes, coumarins, rhodamines, (2,5-bis[5-tert-butyl-2-benzoxazolyl]thiophene) and derivatives thereof.
23. The article of claim 22, wherein the fluorescent dye is included at a concentration of 1 % or less by weight of the polycarbonate.
28. The article of claim 1, wherein the article is a bottle having a bottom portion and a sealable top portion.
29. The article of claim 1, wherein article is a bottle and the bottle has an integrally-molded



handle.

30. The article of claim 1, wherein the photoluminescent material is a fluorescent dye.

31. The article of claim 30, wherein the plastic is a polycarbonate.

32. The article of claim 31, wherein the fluorescent dye is selected from the group consisting of perylene derivatives, anthracene derivatives, indigoid and thioindigoid derivatives, imidazole derivatives, naphthalimide derivatives, xanthenes, thioxanthenes, coumarins, rhodamines, (2,5-bis[5-tert-butyl-2-benzoxazolyl]thiophene) and derivatives thereof.

33. The article of claim 32, wherein the fluorescent dye included in the article is included at a concentration of 1 % or less by weight of the plastic.

34. The article of claim 32, wherein the fluorescent dye in the article provides a blue or violet visual effect and the fluorescent dye is included at a concentration of 0.5 to 0.001% by weight.

35. The article of claim 34, wherein the fluorescent dye in the article is included at a concentration of 0.3 to 0.1% by weight.

36. The article of claim 34, wherein the fluorescent dye in the article is included at a concentration of 0.1 to 0.005% by weight.

37. The article of claim 32, wherein the fluorescent dye in the article provides a red, orange or green visual effect and the fluorescent dye is included at a concentration of less than 0.0005% by weight.

38. The article of claim 37, wherein the fluorescent dye in the article is included at a concentration of 0.0001% to 0.0003% by weight.

39. The article of claim 1, wherein the graphic image is formed from cuts having a depth of from 0.5 to 3 mm or protrusions having a height of from 0.5 to 5 mm or combinations thereof.

40. The article of claim 1, wherein the photoluminescent material is a fluorescent dye that has a quantum yield of 0.7 or greater.

41. The article of claim 40, wherein the fluorescent dye has a quantum yield of 0.9 or greater.

78. The article of claim 1, wherein graphic image includes cuts in the plastic composition extending into the surface of the molded body.

79. The article of claim 2, wherein the graphic images includes cuts in the plastic composition having a depth of from 0.5 to 3 mm.

80. The article of claim 1, wherein the graphic images includes cuts in the plastic composition having a depth of from 0.5 to 3 mm.

### **Evidence Appendix**

None

### **Related Proceedings Appendix**

None